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10/534,821	05/13/2005	Ken-ichi Masumoto	2005-0796A	8749

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WENDEROTH, LIND & PONACK, L.L.P.
1030 15th Street, N.W.,
Suite 400 East
Washington, DC 20005-1503

EXAMINER	
RAINEY, ROBERT R	
ART UNIT	PAPER NUMBER
2629	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/534,821	MASUMOTO ET AL.	
	Examiner	Art Unit	
	ROBERT R. RAINEY	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 6-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 6-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 May 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 8/6/2009 regarding the 35 U.S.C. § 103(a) rejections of claims 1, 3 and 6-19 have been considered but they are not persuasive.

Applicant argues against Chen and Wei individually rather than against the combination as presented. It is insufficient to argue against individual references when the rejection is made over a combination of references. Thus the arguments are unpersuasive. For example, the particular issue that applicant raises with regard to Wei is moot in the combination as presented since there is no requirement to bodily incorporate Wei into Chen. It is sufficient for the combination to use the teaching of the push/pull transistor arrangement driving the anode of the LED without also importing the use of transistor 30.

In hopes of furthering prosecution, examiner also offers that: Even if transistor 30 were to be used in the combination, examiner would find applicant's arguments regarding the timing of the switching of the transistors unpersuasive. Wei describes the signal driving transistors 20 and 21 as "column logic" and the signal driving transistor 31 as "row logic" (ref Wei 4:16-55). While one might conceive of a situation such as that described by applicant in which the row and column logic signals are tied together or the row transistors are always turned off before the column transistors are turned off, the most common condition, in which a row signal is held while column signals are pulsed, would certainly be reasonably suggested. Examiner's reading of the specification as a whole leads

to the conclusion that the common condition is the one that applies and that Fig. 2 describes a condition in which transistor 30 is ON throughout the entire time period depicted in Fig. 2 on sheet 1 of 2. Compare for example the Fig. 2 on sheet 2 of 2 and note that the changes described in going from Fig. 1 to Fig. 3 would not have eliminated the current flowing through diode 11 after time T1 if the phenomenon postulated by applicant were indeed responsible for this current flow.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 1, 3 and 6-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0098829 to *Chen et al.* ("*Chen*") in view of U.S. Patent No. 5,723,950 to *Wei et al.* ("*Wei*").

As to **claim 13**, *Chen* discloses an active matrix OLED/PLED pixel driving circuit and in particular:

A light emitting device comprising:

a current feeding circuit (see for example Fig. 3A at least item 34);

a first switching element (see for example Fig. 3A item 33); and

an organic electro luminescence element having an anode connected with the first switching element and a cathode connected with the earth (see for example Fig. 3A item 36 and [0014]; note that it is well known that OLEDs are organic electro luminescence elements; that the cathode connects to earth, i.e. a return potential, would have been fairly suggested to one of ordinary skill in the art),

wherein an end of the first switching element is connected with the current feeding circuit (see for example Fig. 3A).

Chen does not expressly disclose a second switching element such that the circuit comprises:

a push-pull circuit including a first switching element and a second switching element that are cascaded; and

an organic electro luminescence element having an anode connected with a connecting point of the first switching element and the second switching element, and a cathode connected with the earth,

wherein an end of the push-pull circuit is connected with the current feeding circuit, and another end of the push-pull circuit is connected with the earth.

Wei discloses a precharge driver for light emitting devices (see for example title) that include organic LEDs with an associated internal capacitance (see for example 1:53-1:57 or 2:58-3:5) and in particular:

a push-pull circuit including a first switching element (see for example Fig. 1 item 20) and a second switching element (see for example Fig. 1 item 21) that are cascaded; and

an organic electro luminescence element (see for example Fig. 1 items 11 and 12; note that 1:53-1:57 and 2:58-3:5 point out that item 12 is a lumped capacitance element that represents the capacitance of the OLED device as well as that of the wiring) having an anode connected with a connecting point of the first switching element and the second switching element (see for example Fig. 1), and a cathode connected with the earth (see for example Fig. 1 and 2; the cathode is connected through transistor 30, which during the switching described in Fig. 2 "... operates as a current sink" 4:44-47, so it is connected in the sense that a circuit path can be traced from the cathode to earth as well as in the sense that an electrical path to earth is provided during the operation of the first and second switches),

wherein an end of the push-pull circuit is connected with the current feeding circuit and another end of the push-pull circuit is connected with the earth (see for example Fig. 1), and

wherein a residual electric charge in the organic electro luminescence element is discharged after an application of a DC forward voltage to the organic electro luminescence element is stopped (see for example Fig. 1 and 2; note that when transistor 20 is turned off and transistor 21 is turned on the direction of current through the lumped element capacitor 12, I_C, is reversed representing the

discharge of the capacitor; as previously noted this capacitor represents the capacitance of the OLED as well as other capacitances thus the discharge of the capacitance associated with the OLED is taught; note that even without the explicit teaching of residual electric discharge, the circuit of Wei would still inherently produce the claimed result and thus anticipate the limitation), the discharge of the residual electric charge resulting in a reverse current that is fed to the organic electro luminescence element through a defective part of the organic electro luminescence element (this is inherent in the function of the circuit when combined with the nature of the electro luminescence elements themselves and thus taught), the defective part of the organic electro luminescence element having a low resistance (this is just a feature inherent in the electroluminescent element and thus taught).

Chen and *Wei* are analogous art because they are from the same field of endeavor, which is matrix type displays.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to add the push-pull element drive arrangement disclosed by *Wei* to the drive circuit of *Chen* for example by replacing the single FET33 with dual FETs such as FETs 20 and 21, with appropriate polarity considerations. The suggestion/motivation would have been to provide advantages such as to discharge the capacitance of the display element and any signal line capacitances quickly in order to assure quick extinguishment of light emission.

As to **claim 14**, in addition to the rejection of claim 13 over *Chen* and *Wei*, *Wei* further discloses that the push-pull circuit connects the anode of the organic electro luminescence element with the earth through the second switching element by turning on the second switching element, the second switching element being located between the connecting point and the earth (see for example Fig. 1 noting the connections of transistor 21).

As to **claim 15**, in addition to the rejection of claim 14 over *Chen* and *Wei*, *Wei* further discloses that a current for lighting the organic electro luminescence element is fed from the current feeding circuit to the organic electro luminescence element through the first switching element when the first switching element is turned on and the second switching element is turned off (see for example Fig. 1 and 4:16-39), and subsequently the residual charge in the organic electro luminescence element is discharged through the second switching element when the first switching element is turned off and the second switching element is turned on (see for example Fig. 1 and 2; note that when transistor 20 is turned off and transistor 21 is turned on the direction of current through the lumped element capacitor 12, I.sub.C, is reversed representing the discharge of the capacitor; as previously noted this capacitor represents the capacitance of the OLED as well as other capacitances thus the discharge of the capacitance associated with the OLED is taught; further note that the fact that Wei describes several other benefits and functions of the circuit does not detract

from the fact that it also discharges the residual charge in the organic electro luminescence element).

As to **claim 16**, in addition to the rejection of claim 13 over *Chen* and *Wei*, *Chen* further discloses that the current feeding circuit includes a capacitive element (see for example Fig. 3A item 35) for accumulating an electric charge supplied by a power supply terminal and that a lighting current is fed to the organic electro luminescence element through the first switching element from the capacitive element of the current feeding circuit when the first switching element is turned on; and *Wei* further discloses that a lighting current is fed to the organic electro luminescence element through the first switching element of the current feeding circuit when the first switching element is turned on and the second switching element is turned off (see for example Fig. 1 and 4:16-39).

As to **claim 17**, in addition to the rejection of claim 16 over *Chen* and *Wei*, *Chen* further discloses that the organic electro luminescence element performs static lighting by charging the capacitive element of the current feeding circuit with the electric charge when the first switching element is turned off (see for example Chen Fig. 3A and [0009]).

As to **claim 19**, in addition to the rejection of claim 13 over *Chen* and *Wei*, *Wei* further discloses the inversion of the sense of the logic signal between the first and second transistors (see for example Fig. 1).

Examiner takes official notice that placing an inverter in the path between a logic signal and a switching transistor in order to invert the sense of the logic signal applied to the transistor was well known in the art at the time of the invention.

The prior art device of *Chen* and *Wei* differs from the claimed device only by the substitution of a transistor and an external inverter for the transistor with intrinsic inversion of the logic signal. The replacement device and its function was known in the prior art. The recognition of the interchangeability of the devices would have required no more than ordinary skill in the art and the implementation of the substitution would have required no more than ordinary skill in the art. Thus one of ordinary skill in the art could have implemented the claimed invention.

Claims 1, 3, 7 and 8 are rejected on the same grounds and arguments as claim 13.

As to **claim 6**, *Chen* further discloses that a signal different from the control signal is utilized for controlling the application of the DC forward voltage to the organic electro luminescence element (see for example Fig. 1 noting that

the logical sense of the signal applied to transistor 20 is inverted from the logical sense of the signal applied to transistor 21, that is in a case in which transistor 20 is turned on a signal is sent that turns on transistor 20 and a control signal is sent that turns off transistor 21, thus the signal applied to transistor 20 is different from the control signal applied to transistor 21 because the control achieved is different). If it were held that the claim should be read that the two signals must be generated by separate active elements, the claimed modification would still have required no more than ordinary skill in the art to so implement the circuit. It would have been an obvious matter of design choice to use such a separate signal, since applicant has not disclosed that using a separate signal solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the use of the commonly produced signal as in *Chen* and *Wei* and applicants other claims. The suggestion/motivation for such a design choice would have been to provide advantages such as to prevent potential overlap of on states between the push-pull transistors.

Claim 9 is rejected on the same grounds and arguments as claim 14.

Claim 10 is rejected on the same grounds and arguments as claim 15.

Claim 11 is rejected on the same grounds and arguments as claim 16.

Claim 12 is rejected on the same grounds and arguments as claim 17.

Claim 18 is rejected on the same grounds and arguments as claim 19.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT R. RAINEY whose telephone number is (571)270-3313. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RR/

/Amare Mengistu/
Supervisory Patent Examiner, Art Unit 2629